IOWA DEPARTMENT OF TRANSPORTATION

To Office:	Specification Committee	**Date:**	April 1, 2015
Attention:		**Ref. No.:**	305
From:	Thomas L. Reis, P.E.		
Office:	Specifications		
Subject:	Agenda for April 13, 2015, Specification Committee Meeting		

The Specification Committee will meet on Monday, April 13, 2015, at 9:00 a.m. in the NW Wing 1st Floor Conference Room.

The agenda is as follows:

1. **Article 1101.03, Definition of Terms.**
Article 1108.03, C.

The Specifications Section requests to add Department holidays to the standard specifications.

2. **Article 2303, Flexible Paving Mixtures.**

The Office of Construction and Materials requests various revisions to the specifications for flexible paving mixtures.

3. **Article 2304.02, B, HMA Option (Detour Pavement).**

The Office of Construction and Materials requests to clarify the binder required for HMA detour pavement.

4. **Article 2517.02, B, HMA Paving Projects (Railroad Approach Sections).**
Article 2529.02, A, Hot Mix Asphalt Mixture (Full Depth Finish Patches).
Article 2530.02, A, Hot Mix Asphalt Mixture (Partial Depth Finish Patches).

The Office of Construction and Materials requests to allow polymer modified binder for railroad approach sections and full and partial depth patches.

5. **DS-12054, Hot Mix Asphalt Interlayer.**

The Office of Construction and Materials requests revisions to the Developmental Specifications for Hot Mix Asphalt Interlayer.

6. **DS-12055, Hot Mix Asphalt Thin Lift Overlay.**

The Office of Construction and Materials requests revisions to the Developmental Specifications for Hot Mix Asphalt Thin Lift Overlay.

7. **SS-12010, Evaluation of Longitudinal Joint Quality.**

The Office of Construction and Materials requests revisions to the Supplemental Specifications for Evaluation of Longitudinal Joint Quality.

8. **Metrication.**

The Specifications Section would like to discuss the Department's future use of metric units.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications	**Item 1**
Submittal Date: 3/31/2015	**Proposed Effective Date:** October 2015	
Article No.: 1101.03 **Title:** Definition of Terms **Article No.:** 1108.03, C **Title:** Limitations of Operations	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

1101.03, Definition of Terms.

Add the Article:

Holidays.

The following holidays are observed by the Department:

- New Year's Day, January 1,
- Martin Luther King, Jr.'s Birthday, third Monday in January,
- Memorial Day, last Monday in May,
- Independence Day, July 4,
- Labor Day, first Monday in September,
- Veterans Day, November 11,
- Thanksgiving Day, fourth Thursday in November,
- Friday after Thanksgiving, Friday after Thanksgiving Day, and
- Christmas Day, December 25.

1108.03, C.

Delete the second sentence:

~~The Contractor should request a determination of the holidays to be observed at the beginning of each calendar year.~~

Comments:

Member's Requested Change: **(Do not use '<u>Track Changes</u>', or '<u>Mark-Up</u>'. Use ~~Strikeout~~ and Highlight.)**

Reason for Revision: To publish the dates of the Department's observed holidays for contractor's information.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 2**
Submittal Date: 3/30/2015	**Proposed Effective Date:** October 2015	
Article No.: 2303 **Title:** Flexible Paving Mixtures	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2303.02, C, 6, c, Unclassified RAP.

Replace Note 3 of Table 2303.02-1:

Certified RAP meeting Type B quality for alumina per Section 4127 (by a lab designated by the Engineer) shall have the same maximum allowable usage as Classified RAP for mixes allowing Type B aggregate quality, and credit for crushed particles shall be the percent of aggregate retained on the No. 8 (2.36 mm) sieve from Engineer's extraction test.

2303.02, E, 1, Tack Coat.

Add to the end of the Article:

An equivalent trackless product approved on AASHTO's Product Evaluation Listing (APEL) may be used when ambient temperatures are at least 55ºF (12ºC).

2303.03, D, 3, b, 1. Asphalt Binder.

Add to the end of the Article:

Do not sample when the production of HMA that incorporates the binder is less than 100 tons (100 Mg) in a day.

2303.03, D, 3, c, 10

Add to the end of the Article:

On or after the third occurrence of the moving average point for absolute deviation from target lab voids falls outside the specification tolerance limit, the Engineer may declare the lot or portions of the lot defective.

2303.05, A, 4.

Replace the first sentence.

When the basis of payment is by area (or by weight and the final lift of the course has been placed), payment will be further adjusted by the appropriate percentage in Table 2303.05-2 below according to the quality index for thickness determined for that lot:

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Table 2303.02-1

Note 1. At least 70% of the total asphalt binder in the surface mix shall be virgin.

2. Certified RAP meeting Type A quality for alumina per Section 4127 (by a lab designed by the Engineer) shall have the same maximum allowable usage as Classified RAP for all

mixes, and credit for crushed particles shall be the percent of aggregate retained on the #8 (2.36 mm) sieve from Engineer's extraction test.

3. Certified RAP meeting Type B quality for alumina per Section 4127 (by a lab designated by the Engineer) shall have the same maximum allowable usage as Classified RAP for mixes allowing Type B aggregate quality, and credit for crushed particles shall be the percent of aggregate retained on the #8 (2.36 mm) sieve from Engineer's extraction test.

2303.02, E. Other Materials.

1. Tack Coat.

Tack coat may be SS-1, SS-1H, CSS-1, or CSS-1H. Do not mix CSS and SS grades. RC-70 and MC-70 may also be used after October 1, at the Contractor's option. An equivalent trackless product approved on AASHTO's Product Evaluation Listing (APEL) may be used when ambient temperatures are at least 55F.

2303.03, D, 3, b, 1. Asphalt Binder

Sample and test asphalt binder to verify the quality of the binder grade. Take asphalt binder samples at random times as directed and witnessed by the Engineer according to Materials I.M. 204. Do not sample when the production of HMA that incorporates the binder is less than 100 tons in a day.

2303.03, D, 3, c, 10

Monitor the test results and make mix adjustments, when appropriate, to keep the mixture near the target values. Notify the Engineer whenever the process approaches a specification tolerance limit. When acceptance for lab voids is not based on PWL, cease operations when the moving average point for absolute deviation from target lab voids is outside the specification tolerance limit. Assume responsibility to cease operations, including not incorporating material which has not been placed. Do not start the production process again until notifying the Engineer of the corrective action proposed. On or after the 3rd occurrence of the moving average point for absolute deviation from target lab voids falls outside the specification tolerance limit, the Engineer may declare the lot or portions of the lot defective.

2303.05, A, 4.

When the basis of payment is by area (or by weight and the final lift of the course has been placed), payment will be further adjusted by the appropriate percentage in Table 2303.05-2 below according to the quality index for thickness determined for that lot :

Reason for Revisions:

1. Crushed credit for certified RAP should be the same regardless of alumina content
2. Trackless tack has a higher pull-off strength, but does not quite meet the % residue of traditional tack. These products are approved for use.
3. Sampling waivers are specified for small runs of HMA <100 tons. Clarification is needed to apply this waiver to the binder as well.
4. Current language does not provide the Engineer with recourse when mixtures are not controlled within tolerances for multiple corrective actions over multiple days that may account for the majority of the placement. The majority of issues are resolved after 1 or 2 attempts.
5. Insufficient thickness has the same impact to long term performance regardless of how the item is paid (SY or TON). This table has been applied for both methods since 2010 but has never been clarified in the specification.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: The industry is aware and in support of the crushed credit for RAP and binder sampling waiver. Awaiting comment on items 4 and 5.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 3**
Submittal Date: 3/30/15	**Proposed Effective Date:** October 2015	
Article No.: 2304.02, B **Title:** HMA Option (Detour Pavement)	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2304.02, B, HMA Option.

Add to the beginning of the Article:

Design a mixture per Materials I.M. 510 for the following:

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

B. HMA Option.

Design a mixture per Materials I.M. 510 for the following:

1. For detour pavement carrying less than 10,000,000 total 20 year ESALs, use HMA 1,000,000 ESAL surface or intermediate course, 1/2 inch (12.5 mm) or 3/4 inch (19 mm), with PG 64-22 asphalt binder.

2. For detour pavement carrying more than 10,000,000 total 20 year ESALs, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch (19 mm), with PG 64-22 asphalt binder.

3. For median crossovers, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 (19 mm), with PG 64-22 asphalt binder. Apply Class 1 compaction. The surface lift requires L-4 friction aggregate.

Reason for Revisions: The existing language could be misinterpreted as only PG 64-22 is allowed. Depending on the amount of RAP that is used, the contractor may use 58-28. This is outline in IM 510.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: Industry is in support of the changes.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 4**
Submittal Date: 3/30/15	**Proposed Effective Date:** October 2015	
Article No.: 2517.02, B **Title:** HMA Paving Projects (Railroad Approach Sections) **Article No.:** 2529.02, A **Title:** Hot Mix Asphalt Mixture (Full Depth Finish Patches) **Article No.:** 2530.02, A **Title:** Hot Mix Asphalt Mixture (Partial Depth Finish Patches)	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2517.02, B, HMA Paving Projects.

Replace the second sentence:

Use an asphalt binder meeting or exceeding PG 64-22 ~~asphalt binder~~.

2529.02, A, Hot Mix Asphalt Mixture.

Replace the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL surface mixture. ~~with~~ Use an asphalt binder meeting or exceeding PG 64-22 ~~Performance Graded asphalt binder~~.

2529.02, A, Hot Mix Asphalt Mixture.

Replace the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL 3/8 or 1/2 inch (9.5 mm or 12.5 mm) surface mixture. ~~with~~ Use an asphalt binder that meets or exceeds a PG 64-22 ~~Performance Graded asphalt binder~~.

Comments:

Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)

2517.02, B. HMA Paving Projects.

Use an HMA mixture that is one mix level above the approaching surface course. ~~Use PG 64-22 asphalt binder.~~ Use an asphalt binder that meets or exceeds a PG 64-22.

2529.02 MATERIALS.

A. Hot Mix Asphalt Mixture.

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL surface mixture. Use an asphalt binder that meets or exceeds ~~with~~ a PG 64-22 ~~Performance Graded asphalt binder~~.

2530.02 MATERIALS.
Meet the requirements for the type of material specified.

A. Hot Mix Asphalt Patching Material.
Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL 3/8 or 1/2 inch (9.5 mm or 12.5 mm) surface mixture. Use an asphalt binder that meets or exceeds a ~~with~~ PG 64-22 ~~Performance Graded asphalt binder~~.

Reason for Revisions: A polymer modified asphalt would also be acceptable.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: Industry is in support of the changes.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 5**
Submittal Date: 3/27/2015	**Proposed Effective Date:** June 16, 2015	
Article No.: DS-12054 **Title:** Hot Mix Asphalt Interlayer	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for Hot Mix Asphalt Interlayer.			
Comments:			

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

12054.02, B, 3
3. Do not use RAP.

12054.03 CONSTRUCTION.
A. Tack the cleaned surface prior to placement of the interlayer using a trackless product approved on AASHTO's Product Evaluation Listing (APEL). Apply a second tack coat prior to placement of the intermediate/surface layer.

C. Do not pave unless ambient temperatures are at least 60F and rising [renumerate]

Reason for Revisions:

- RAP was not allowed in the initial Special Provision and was accidentally removed when the DS was created.
- Trackless tack is recommended for thin lifts as it has higher pull-off strength and resistance to shear.
- Cold weather can create workability issues with highly modified oils.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No**
Comments:					

DRAFT DS-12XXX
(Replaces DS-12054)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
HOT MIX ASPHALT INTERLAYER

Effective Date
June 16, 2015

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.
These specifications describe requirements for a highly polymer modified asphalt interlayer. Apply Section 2303 of the Standard Specifications unless otherwise directed in these specifications.

12XXX.02 MATERIALS.

A. Asphalt Binder.
Use a PG+ 64-34.

B. Mix Design.

1. See Materials I.M. 510 Appendix A.

2. Mix approval is based on Performance Testing Requirements per Table 4 in Materials I.M. 510 Appendix A.

3. Do not use RAP.

12XXX.03 CONSTRUCTION.

A. Tack the cleaned surface prior to placement of the interlayer using a trackless product approved on AASHTO's Product Evaluation Listing (APEL). Apply a second tack coat prior to placement of the intermediate/surface layer.

B. Compact with steel wheeled roller.

C. Do not pave unless ambient temperatures are at least 60ºF (15ºC) and rising.

~~**C**~~ **D.** Do not open to traffic until the entire mat has cooled below 150°F (65°C).

~~**D**~~ **E. Quality Assurance/Quality Control.**

1. Field Voids Acceptance.

Acceptance for field voids shall be Class II compaction defined in Section 2303 of the Standard Specifications.

2. **Lab Voids Acceptance.**
   Sample and test one hot box per day of production unless otherwise approved by the Engineer. Apply Article 2303.05, A, 3, a, 2, of the Standard Specifications for AAD acceptance. Air void target is based on approved JMF.

3. Take at least one cold feed for gradation control.

12XXX.04 METHOD OF MEASUREMENT.
Hot Mix Asphalt Interlayer, of the size specified, will be measured according to Article 2303.04 of the Standard Specifications.

12XXX.05 BASIS OF PAYMENT.
Hot Mix Asphalt Interlayer, of the size specified, will be paid for according to Article 2303.05 of the Standard Specifications.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 6**
Submittal Date: 3/27/2015	**Proposed Effective Date:** June 16, 2015	
Article No.: DS-12055 **Title:** Hot Mix Asphalt Thin Lift Overlay	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for Hot Mix Asphalt Thin Lift Overlay.			
Comments:			

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

12055.01 DESCRIPTION.

These specifications describe the requirements for a highly polymer modified asphalt thin lift surface course. Apply Section 2303 of the Standard Specifications unless otherwise directed in these specifications. ~~Not for use on interstate roadways.~~

A. Asphalt Binder.

Use a PG 76-34P with a minimum Percent Recovery of 90% when tested per AASHTO T350 at 3.2 kPa. See Figure 4137.01-01 for test temperature. ~~Use a PG+ 76-34 with a minimum 90% elastic recovery when RTFO-aged per AASHTO T 240 and tested per AASHTO T 301 at 77°F (25°C).~~

B. Mix Design.

2. 50% of the total aggregate shall be Friction Type 4 for non-interstates, and Friction Type 2 for interstates.

4. Do not use RAP.

12055.03 CONSTRUCTION.

A. Apply a tack coat prior to placement of the thin lift overlay using a trackless product approved on AASHTO's Product Evaluation Listing (APEL).

B. Pave when ambient temperatures are at least 60F and rising

[renumerate]

Reason for Revisions:

- There is a need to change the name of this treatment so it is not to be confused with thin overlays does with standard dense graded HMA in the past.
- The test to ensure the presence of polymer has changed to AASHTO T 350.
- Since it was decided to become a DS, the application can be controlled and the blanket statement regarding interstate use can be removed.

County or City Input Needed (X one)	**Yes**	**No** X
Comments:		
Industry Input Needed (X one)	**Yes**	**No** X

Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No**
Comments:					

DRAFT DS-12XXX
(Replaces DS-12055)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
HOT MIX ASPHALT THIN LIFT OVERLAY

Effective Date
June 16, 2015

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMANTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.
These specifications describe the requirements for a highly polymer modified asphalt thin lift surface course. Apply Section 2303 of the Standard Specifications unless otherwise directed in these specifications. ~~Not for use on interstate roadways.~~

12XXX.02 MATERIALS.

A. Asphalt Binder.
Use a PG~~+~~ 76-34P with a minimum percent recovery of 90% ~~elastic recovery~~ when ~~RTFO-aged per AASHTO T 240 and~~ tested per AASHTO T ~~301~~ 350 at ~~77°F (25°C)~~ 3.2 kPa. See Table 4137.01-1 for test temperature.

B. Mix Design.

4. See Materials I.M. 510 Appendix A.

5. 50% of the total aggregate shall be Friction Type 4 for non-interstates, and Friction Type 2 for interstates.

6. Mix approval is based on Performance Testing Requirements per Table 5 in Materials I.M. 510 Appendix A.

7. Do not use RAP.

12XXX.03 CONSTRUCTION.

A. Apply a tack coat prior to placement of the thin lift overlay using a trackless product approved on AASHTO's Product Evaluation Listing (APEL).

B. Pave when ambient temperatures are at least 60ºF (15ºC) and rising

~~**B**~~ **C.** Compact with steel wheeled roller.

~~**C**~~ **D.** Do not open to traffic until the entire mat has cooled below 150°F (65°C).

~~D~~ E. Quality Assurance/Quality Control.

1. **Field Voids Acceptance.**
   Acceptance for field voids shall be Class II compaction defined in Section 2303 of the Standard Specifications.

2. **Lab Voids Acceptance.**
   Sample and test one hot box per day of production unless otherwise approved by the Engineer. Apply Article 2303.05, A, 3, a, 2, of the Standard Specifications for AAD acceptance. Air void target is based on approved JMF.

3. Take at least one cold feed for gradation control.

12XXX.04 METHOD OF MEASUREMENT.
Hot Mix Asphalt Thin Lift Overlay, of the size specified, will be measured according to Article 2303.04 of the Standard Specifications.

12XXX.05 BASIS OF PAYMENT.
Hot Mix Asphalt Thin Lift Overlay, of the size specified, will be paid for according to Article 2303.05 of the Standard Specifications.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder		**Office:** Construction and Materials	**Item 7**
Submittal Date: 3/27/2015		**Proposed Effective Date:** June 16, 2015	
Article No.: **Title:**		**Other:** SS-12010, Evaluation of Longitudinal Joint Quality	
Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Supplemental Specifications for Evaluation of Longitudinal Joint Quality.			
Comments:			

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

12010.02 EVALUATION.

A. General Requirements.

For Class I compaction areas on the surface, longitudinal joint density lots independent from the mat will be established for mainline paving as specified in Article 12010.02, B for acceptance. Class I compaction is defined in Article 2303.03, C, 5 of the Standard Specifications. Mainline shall be considered through lanes within the traveled way including middle turn lanes. ~~These specifications only apply when the total length of eligible longitudinal joints is 12,500 feet (3750 m) or greater.~~ Sampling and testing will be for information only.

B. Sampling.

~~1. Divide the total length of surface longitudinal joints into 2,500-foot sublots. If the last sublot is less than 1,000 feet, combine its length with the previous sublot. If the last sublot is 1,000 feet or more establish an additional sublot. The Engineer will randomly determine a sample location within each sublot. The joint length need not be contiguous and may include multiple joints throughout the project limits.~~

2. When surface paving abuts a previously placed surface course, forming a completed longitudinal joint eligible for evaluation, the Engineer will obtain and test samples according to Materials I.M. 320 and Materials I.M. 321. Using the random core locations determined for the daily field voids lot (mat), the Engineer will randomly select three of these locations to be sampled for joint density. When the length of the longitudinal joint is less than 3 mat sublots, the Engineer will select two sublot locations. When the length of the longitudinal joint(s) is less than 2 mat sublots, the joint cores will be waived.

C. Lot Size.

1. The lot size shall be the length of the field voids lot where longitudinal joint(s) exist. ~~Except when the entire production of the bid item is placed in in a single day, consider all sublots obtained on the first day as a separate test strip lot. If the test strip lot size is less than 5, the Engineer will obtain additional samples such that the total test strip lot size is at least 5.~~

~~2. Combine all subsequent sublots into lots of 8.~~

~~3. If the last lot has fewer than 8 samples, combine them with the previous lot.~~

E. Joint Density ~~Percent Within Limits (PWL).~~

Determine the average joint density as a percent of the average mat density using

Equation 1 in Appendix A. Mat cores and joint cores shall be collected on the same day of production for density determination. Mat cores identified as outliers for field voids acceptance will not be used in the average mat density calculation. ~~Determine PWL for each lot using a lower specification limit (LSL) of 0% voids (100.0% of G_{mm}) and an upper specification limit of 10.0% voids (90% G_{mm}). PWL calculations can be found in Appendix A.~~

A. Joint Density ~~PWL~~

Equation 1

$$\boldsymbol{Avg\ Joint\ Density = 100 \times \frac{Avg\ Joint\ G_{mb}}{Avg\ Mat\ G_{mb}}}$$

~~The following Excel function is used to Calculate PWL for sample size, N, as follows:~~

~~**Equation 1**~~

~~"=ROUND(100*(1-IF(MAX(0,1/2-1/2*QIU*(N^0.5/(N-1)))>1,1,MAX(0,ROUND(BETADIST(MAX(0,1/2-1/2*QIU*(N^0.5/(N-1))),N/2-1,N/2-1,0),5)))),1)+ROUND(100*(1-IF(MAX(0,1/2-1/2*QIL*(N^0.5/(N-1)))>1,1,MAX(0,ROUND(BETADIST(MAX(0,1/2-1/2*QIL*(N^0.5/(N-1))),N/2-1,N/2-1,0),5)))),1)-100"~~

~~Where~~

~~$N = Lot\ Size$~~

~~$$QI_U = \frac{(Lot\ AvgG_{mb} - 0.90xLot\ AvgG_{mm})}{Lot\ stdevG_{mb}}$$~~

~~$$QI_L = \frac{(Lot\ AvgG_{mm} - Lot\ AvgG_{mb})}{Lot\ stdevG_{mb}}$$~~

~~Utilize the Iowa DOT HMA Chart program to determine lot payment.~~

Reason for Revisions: Observations from 2014 revealed difficulties in maintaining lots over several days. Daily lots are preferred. PWL was very poor and not feasible due to variability at the joint. The direction will be to collect 3 joint cores in addition to the 8 daily mat cores on days where a joint is created. Comparing the joint cores to the mat cores eliminates the need to track Gmm samples for both hot and cold sides of the joint. Instead, only the Gmb of the hot-side cores will be used in the comparison.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: Industry is in support of the changes.					

SS-12XXX
(Replaces SS-12010)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
EVALUATION OF LONGITUDINAL JOINT QUALITY FOR FLEXIBLE PAVING MIXTURES

Effective Date
June 16, 2015

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.
This work is evaluating in-place quality of centerline longitudinal joints on the surface wearing course for flexible paving and replaces Article 2303.03, D, 4, c, of the Standard Specifications.

12XXX.02 EVALUATION.

A. General Requirements.
For Class I compaction areas on the surface, longitudinal joint density lots independent from the mat will be established for mainline paving as specified in Article 12XXX.02, B for acceptance. Class I compaction is defined in Article 2303.03, C, 5, of the Standard Specifications. Mainline shall be considered through lanes within the traveled way including middle turn lanes. ~~These specifications only apply when the total length of eligible longitudinal joints is 12,500 feet (3750 m) or greater.~~ Sampling and testing will be for information only.

B. Sampling.

~~**1.** Divide the total length of surface longitudinal joints into 2500 foot (750 m) sublots. If the last sublot is less than 1000 feet (300 m), combine its length with the previous sublot. If the last sublot is 1000 feet (300 m) or more establish an additional sublot. The Engineer will randomly determine a sample location within each sublot. The joint length need not be contiguous and may include multiple joints throughout the project limits.~~

2. When surface paving abuts a previously placed surface course, forming a completed longitudinal joint eligible for evaluation, the Engineer will obtain and test samples according to Materials I.M. 320 and 321. Using random core locations determined for daily field voids lot (mat), the Engineer will randomly select three of these locations to be sampled for joint density. When the length of longitudinal joint is less than 3 mat sublots, the Engineer will select two sublot locations. When the length of longitudinal joint(s) is less than 2 mat sublots, joint cores will be waived.

3. When sampling for mat field voids is modified to include multiple days due to low production, sampling from the joint may also be modified by the Engineer.

4. Joints constructed with tandem pavers will be included, unless otherwise indicated in the contract documents.

5. For vertical joints, center joint cores on the visible seam between to the two adjacent lanes as shown in Appendix A of these specifications.

6. For notched wedge joints, center joint cores 4 inches (100 mm) away from the visible seam in the direction of the wedge as shown in Appendix A of these specifications.

7. Under the direction and witnessing of the Engineer, drill one 6 inch (150 mm) diameter core at each sample location as soon as possible, but no later than the day following the completion of the longitudinal joint.

8. Do not compress, bend, or distort samples during cutting, handling, transporting, and storing. If samples are damaged, immediately obtain replacement samples, as directed by the Engineer, longitudinally from within 12 inches (300 mm) of the original sample location.

9. Apply Article 2303.03, D, 5, c, of the Standard Specifications for post drilling operations.

10. Report sample locations and test results on the daily plant report corresponding with the JMF used in production of the sublot(s).

C. Lot Size.

Lot size shall be the length of field voids lot where longitudinal joint(s) exist.

~~**1.** Except when the entire production of the bid item is placed in a single day, consider all sublots obtained on the first day as a separate test strip lot. If the test strip lot size is less than five, the Engineer will obtain additional samples such that the total test strip lot size is at least five.~~

~~**2.** Combine all subsequent sublots into lots of eight.~~

~~**3.** If the last lot has fewer than eight samples, combine them with the previous lot.~~

D. Excluded Areas.

1. The Engineer will not obtain samples from the following excluded areas to determine lot acceptance:

- Joints where one side of the joint is formed by existing pavement not constructed under this contract
- Joints where one side of the joint is not on the mainline surface.
- Areas within 1 foot (300 mm) longitudinally of an obstruction during construction of the surface course (manholes, inlet grates, utilities, bridge structures, runout, etc.). Should a random sample location fall within 1 foot (300 mm) of such an area, the Engineer shall select an alternate nearby location away from the obstruction.
- Small areas, such as intersections, gore areas or transitions, or anywhere the Engineer determines paving and phasing methods do not allow for consistent longitudinal joint construction.

2. Prior to paving, submit requests in writing to the Engineer for consideration of any areas to be excluded on this basis. The Engineer will make the final determination.

E. ~~Percent Within Limits~~ Joint Density.

~~Determine PWL for each lot using a lower specification limit (LSL) of 0% voids (100.0% of G_{mm}) and an upper specification limit of 10.0% voids (90% G_{mm}). PWL calculations can be found in Appendix A.~~ Determine average joint density as a percent of average mat density per Appendix A. Mat cores and joint cores shall be collected on the same day of production for density

determination. Mat cores identified as outliers for field voids acceptance will not be used in average mat density calculation.

12XXX.03 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
Costs associated with providing joint pavement samples shall be included with the payment for Hot Mix Asphalt Pavement Samples.

APPENDIX A

A. ~~PWL~~ Joint Density

~~The following Excel function is used to Calculate PWL for sample size, N, as follows:~~

~~**Equation 1**~~

$$Avg\ Joint\ Density = 100 \times \frac{Avg\ Joint\ G_{mb}}{Avg\ Mat\ G_{mb}}$$

~~"=ROUND(100*(1-IF(MAX(0,1/2-1/2*QIU*(N^0.5/(N-1)))>1,1,MAX(0,ROUND(BETADIST(MAX(0,1/2-1/2*QIU*(N^0.5/(N-1))),N/2-1,N/2-1,0),5)))),1)+ROUND(100*(1-IF(MAX(0,1/2-1/2*QIL*(N^0.5/(N-1)))>1,1,MAX(0,ROUND(BETADIST(MAX(0,1/2-1/2*QIL*(N^0.5/(N-1))),N/2-1,N/2-1,0),5)))),1)-100"~~

~~Where~~

~~$N = Lot\ Size$~~

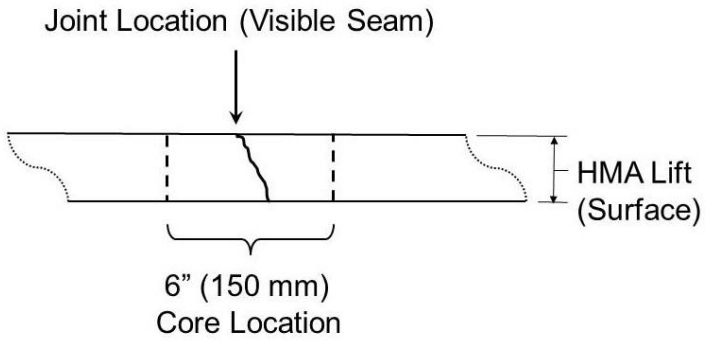
~~$$QI_U = \frac{(Lot\ AvgG_{mb} - 0.90xLot\ AvgG_{mm})}{Lot\ stdevG_{mb}}$$~~

~~$$QI_L = \frac{(Lot\ AvgG_{mm} - Lot\ AvgG_{mb})}{Lot\ stdevG_{mb}}$$~~

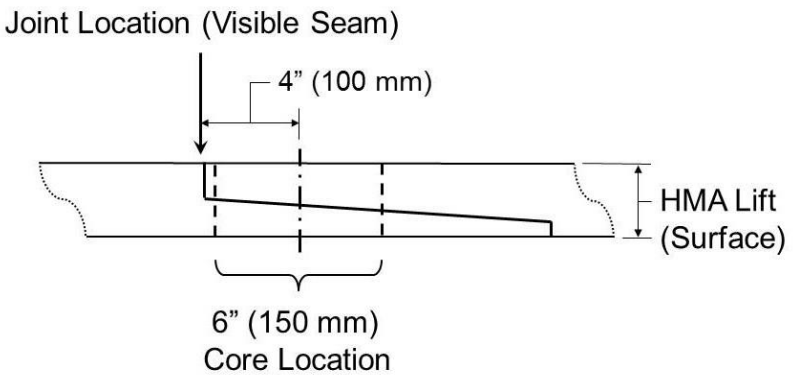
~~Utilize the Iowa DOT HMA Chart program to determine lot payment.~~

B. Coring Diagram

(a) Vertical Edge/Conventional (Butt) Joint



(b) Notched Wedge Joint


Joint Location (Visible Seam)
4” (100 mm)
HMA Lift
(Surface)
6” (150 mm)
Core Location